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"For the theory of the sun it is indifferent which of these varieties of configurations of matter may have been the immediate antecedent of his incadescence, but I can never think of these material antecedents without remembering a question put to me thirty years ago by the late Bishop EWING, Bishop of Argyll and the Isles; 'Do you imagine that piece of matter to have been as it is from the beginning; to have been created as it is; or to have been as it is through all time till it fell on the earth?' I had told him that I believed the sun to be built up of meteoric stones, but he would not be satisfied till he knew or could imagine what kind of stone. I could not but agree with him in feeling it impossible to imagine that any one of such meteorites as those now before you has been as it is through all time, or that the materials of the sun were like this for all time before they came together and became hot. Surely this stone has an eventful history, but I shall not tax your patience by trying just now to trace conjecturally. I shall only say that we cannot but agree with the common opinion which regards meteorites as fragments broken from larger masses, and we cannot be satisfied without trying to imagine what were the antecedents of those masses."

THE LEANDER McCORMICK OBSERVATORY.*

By H. A. SAYRE.

The LEANDER McCORMICK Observatory is situated on the summit of Mt. Jefferson, at an altitude of about 850 feet above the level of the sea. At the base of the mountain, a mile away, lies the University of Virginia. On the site of the present observatory there once stood a small one, erected in the early days of the university, but afterwards abandoned. The instruments were preserved and are now in the physical laboratory. The present observatory and instruments are the gift of Mr. LEANDER J. McCORMICK, a citizen of Chicago, but a native of Virginia. Through the active efforts of Col. C. S. VENABLE, Professor of Mathematics in the university, the endowment, sufficient to place the observatory on a sound basis, was secured. In 1885 the

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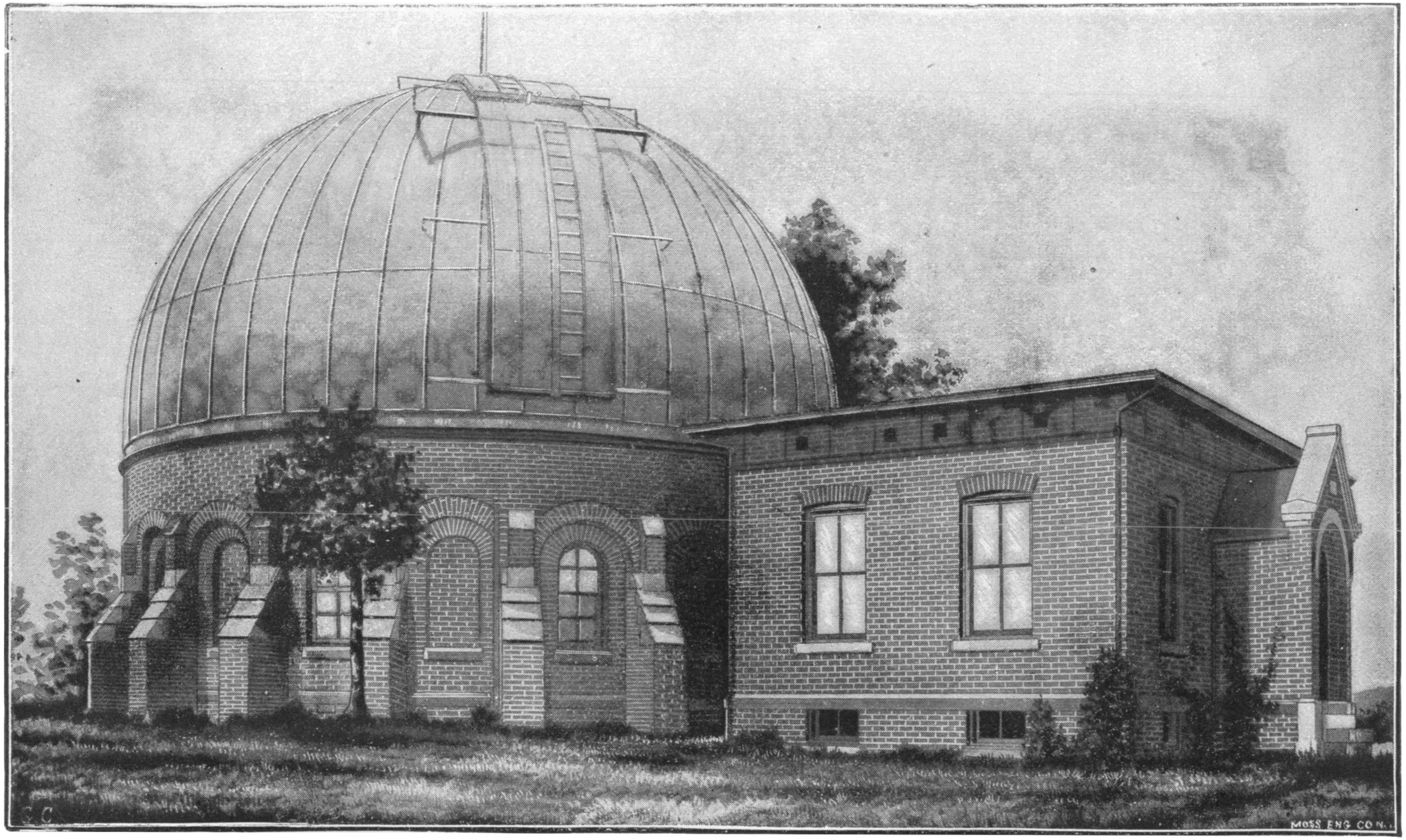
* The woodcut which accompanies this paper we owe to the kindness of Dr. W. T. HARRIS, U. S. Commissioner of Education, Washington, D. C.



McCORMICK OBSERVATORY, UNIVERSITY OF VIRGINIA.

observatory was turned over to the university authorities. The engraving gives a view of the building from the east. In the dome is placed the CLARK 26-inch equatorial. Attached to the dome are two rooms, which are occupied by the computers and contain the library, clocks, chronograph and other instruments. The dome was constructed by Messrs. WARNER & SWASEY, of Cleveland, Ohio, and is 45 feet in diameter. Its weight above the wheels on which it rests is 25,000 pounds. It revolves on a live ring of wheels in sets of three; the centre ones of which support the dome, while the two outer ones rest on circular tracks. Two guide wheels, connecting with each set of wheels, one in front and one behind, run between the tracks of the wall plate. Sliding friction is changed to rolling friction by having the guide wheels so adjusted that the axis of the conical wheels is at right angles to the track at that point. A pull of about eight or ten pounds on the rope will move the dome, which has been rotated through an entire revolution in less than a minute. There are three apertures, six feet wide, with closures six feet square between. This arrangement ensures rapid ventilation. The object-glass made by ALVAN CLARK & SONS is 26 inches in diameter, and has a focal length of 32½ feet.

The inner surfaces of the lenses are made with slightly different radii in order to avoid the "object-glass ghost" found so annoying in many great telescopes. The tube which is of steel is in three sections. The micrometer wires and reading circles are illuminated by incandescent lamps fed by a small bichromate battery. The driving-clock is electrically connected with a SETH THOMAS clock in the computing-room.

In a smaller building near by are a 4-inch equatorial made by KAHLER and a 3-inch transit made by FAUTH & CO., of Washington. The library as yet is small but additions are constantly being made. Professor STONE was at first assisted by Mr. F. P. LEAVENWORTH, now Director of the Haverford College Observatory. His present assistant is Mr. N. M. PARRISH. The Director is also Professor of Astronomy in the university and Editor of the "Annals of Mathematics." The observatory has been devoted largely to the micrometrical determination of the positions of nebulæ. Incidentally a large number of sketches has been made, and several hundred new nebulæ have been detected. The various condensations in the central portion of the Nebula of *Orion* have been compared photometrically. Similar observations have been made of the variable stars in the Huygenian region. Besides these and various miscellaneous observations, measurements of several hundred close southern double-stars have been made. In addition to contributions to the American Astronomical Journal, the Sidereal Messenger and the Annals of Mathematics, the following series of publications has been issued in pamphlet form by the observatory:

1. Transit of *Venus*, December 6, 1882.
2. Tail of Comet 1882, II.
3. Nebula of *Orion*, 1885.
4. Double Stars, 1885–86.
5. Durchmusterung, – 23°.

THE LUNAR CRATER *COPERNICUS*.*

By Edward S. Holden.

The accompanying small figure was made from a negative of the moon taken in the focus of the great telescope on August 25, 1890, at 8 hours, 0 minutes. The original picture of the moon was about five and one-half inches in diameter. A small part of the original showing the lunar crater *Copernicus* has been slightly enlarged and is given in the cut. The scale of the picture is such that the diameter of the whole moon would be about fourteen inches. The diameter of the crater itself is fifty-six miles. The cardinal points, north, south, etc., are indicated on the picture. The original picture is very satisfactory. The representation given here is far less so, but it is the best available. It will probably serve its purpose, however. The other cuts are not enlarged, and show, more or less satisfactorily, the surroundings of this crater.

The walls of the ring-form are not perfectly circular, and they vary somewhat in height at different points.

Their general elevation above the floor of the crater is about eleven thousand feet, rising in places to twelve thousand or even thirteen thousand feet. The slope of the interior terraced wall is far more steep than that of the exterior; and this is a general rule in all such formations on the moon. The average exterior slope

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* Reprinted (abridged) from the Californian Magazine, March, 1892.